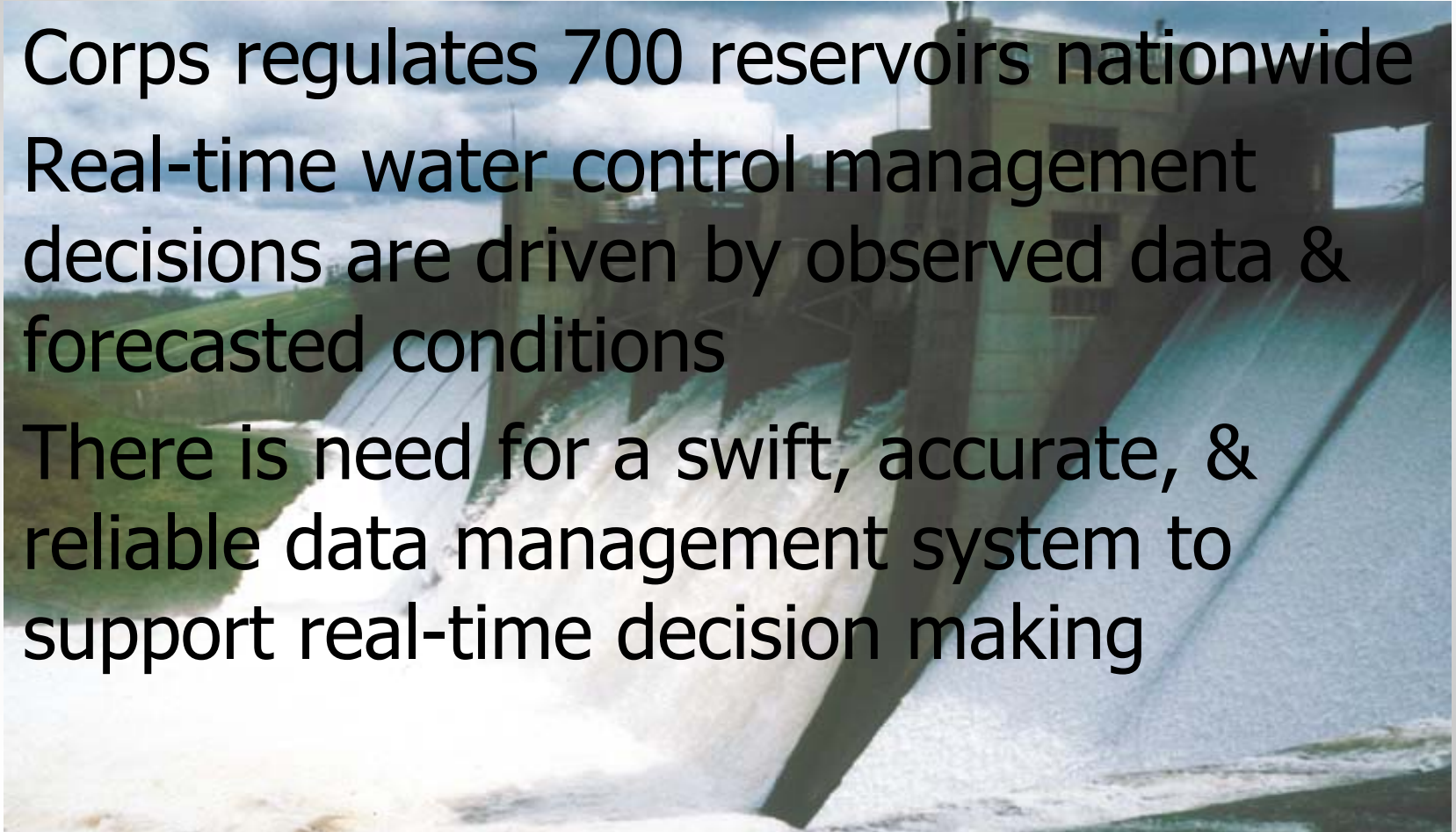# CWMS

Corps Water Management System

U.S. Army Corps of Engineers

Perspective

- Corps regulates 700 reservoirs nationwide
- Real-time water control management decisions are driven by observed data & forecasted conditions
- There is need for a swift, accurate, & reliable data management system to support real-time decision making

Moving to CWMS Vocabulary, etc.

- DSS -> Data Storage System
  - Developed in late '70s by Corps' Hydrologic Engineering Center (HEC)
  - Time series and paired data and text only
  - Provided a common database format (proprietary) to feed models
  - Suite of data management tools developed
  - Deployed worldwide
- CWMS -> Corps Water Management System
- CROHMS -> Columbia River Operational Hydromet Management System
  - Developed by NWD in 60s
  - Initially proprietary format until migrated to DSS format in 1991
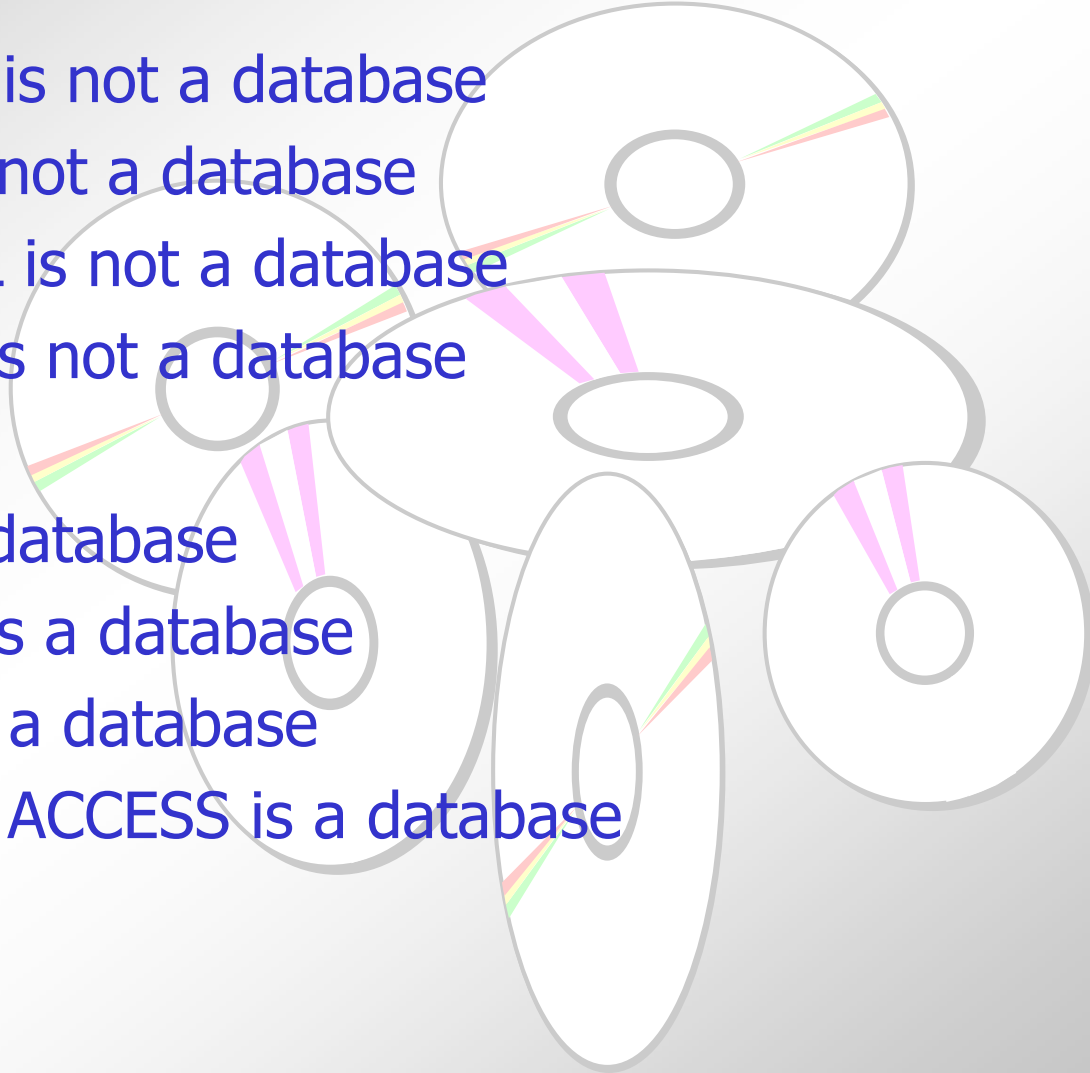
BREAKING NEWS!!

CROHMS AIN'T GOIN' NOWHERE

ISN'Ts and ISs

- CROHMS is not a database
- CWMS is not a database
- SEDQUAL is not a database
- STORET is not a database

- DSS is a database
- ORACLE is a database
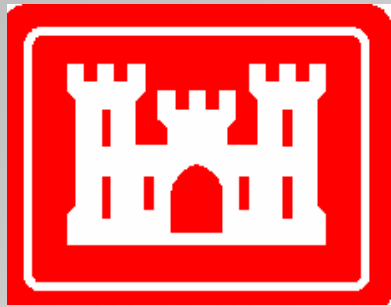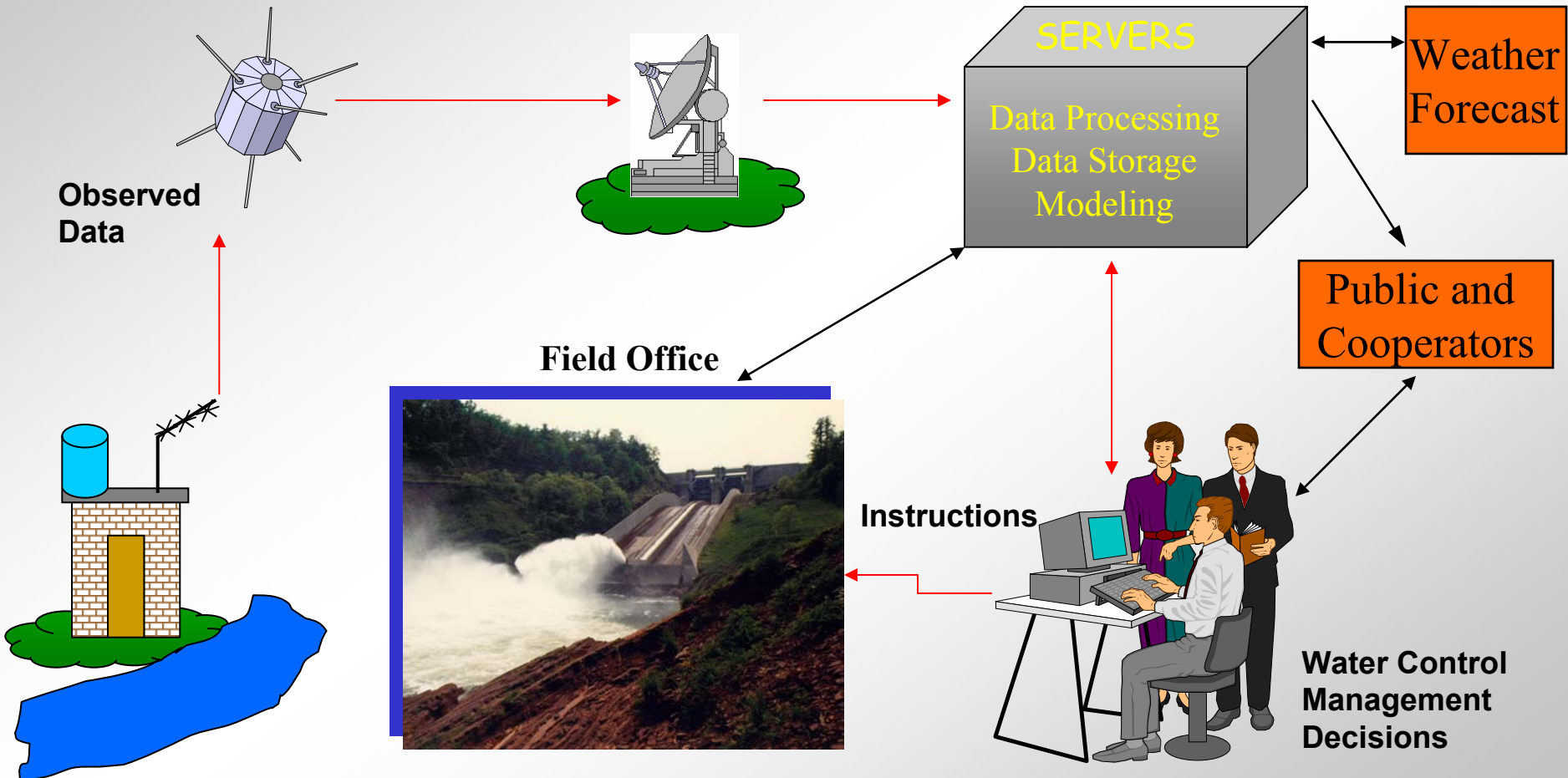- MySQL is a database
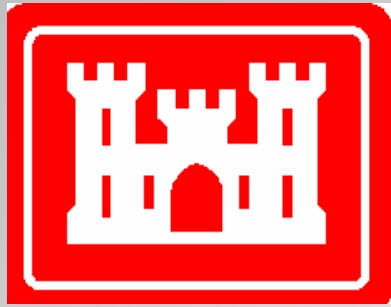- Microsoft ACCESS is a database

CWMS Overview

An integrated system of hardware, software, and communication resources supporting the Corps' real-time water control management mission

From Data to Water Control Management Decisions

Observed Data

SERVERS

Data Processing
Data Storage
Modeling

Weather Forecast

Field Office

Public and Cooperators

Instructions

Water Control Management Decisions

Integration of GIS (Geographic Info Systems)

- GIS used throughout modeling process:

  - Watershed delineation
  - Calculation of physical characteristics used to estimate hydrologic parameters
  - Development of gridded data
  - Extraction of cross-sections for use in RAS
  - Delineation of inundated areas
  - Detailed analysis of data for Emergency Response purposes

Stream Gage Locations
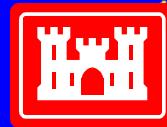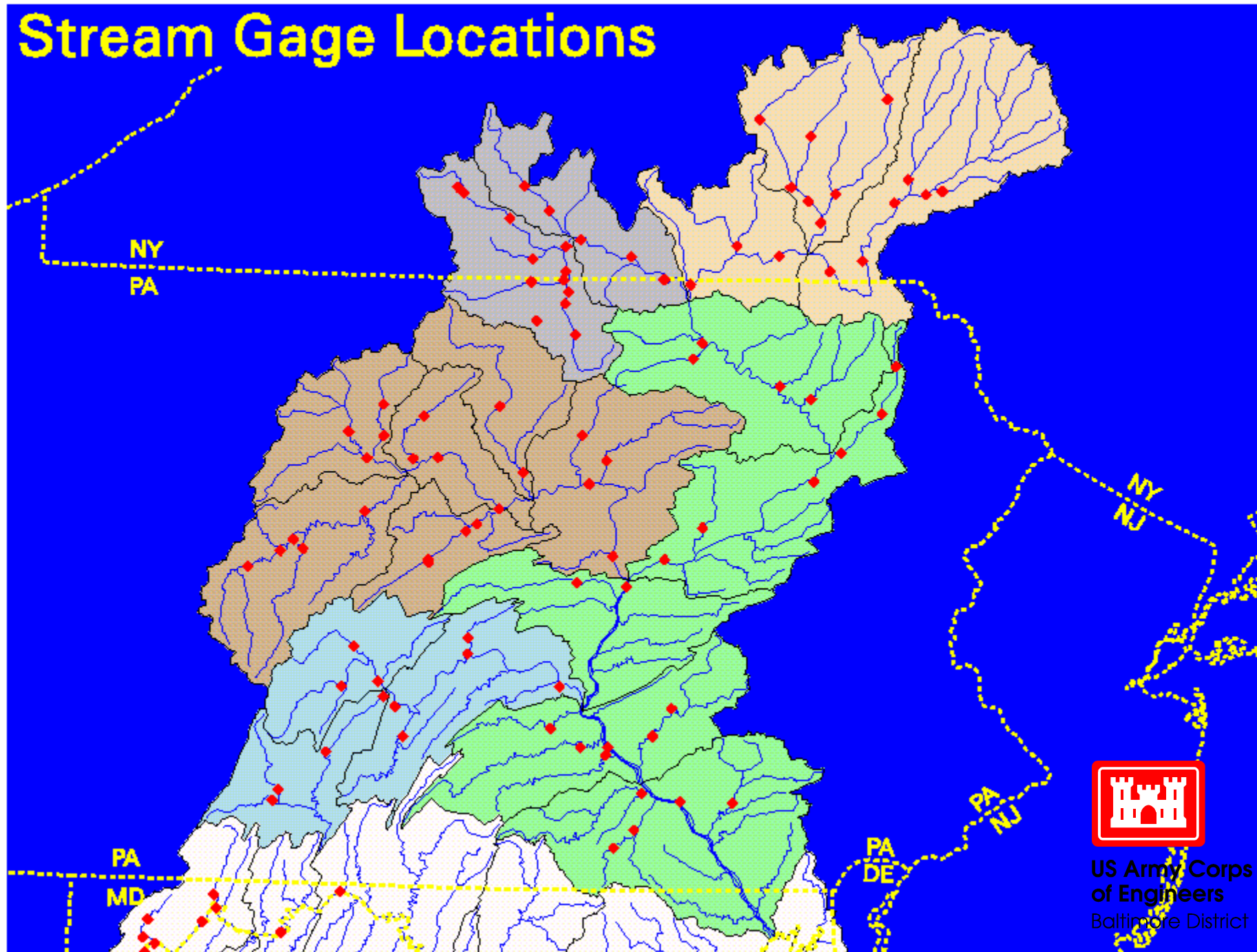
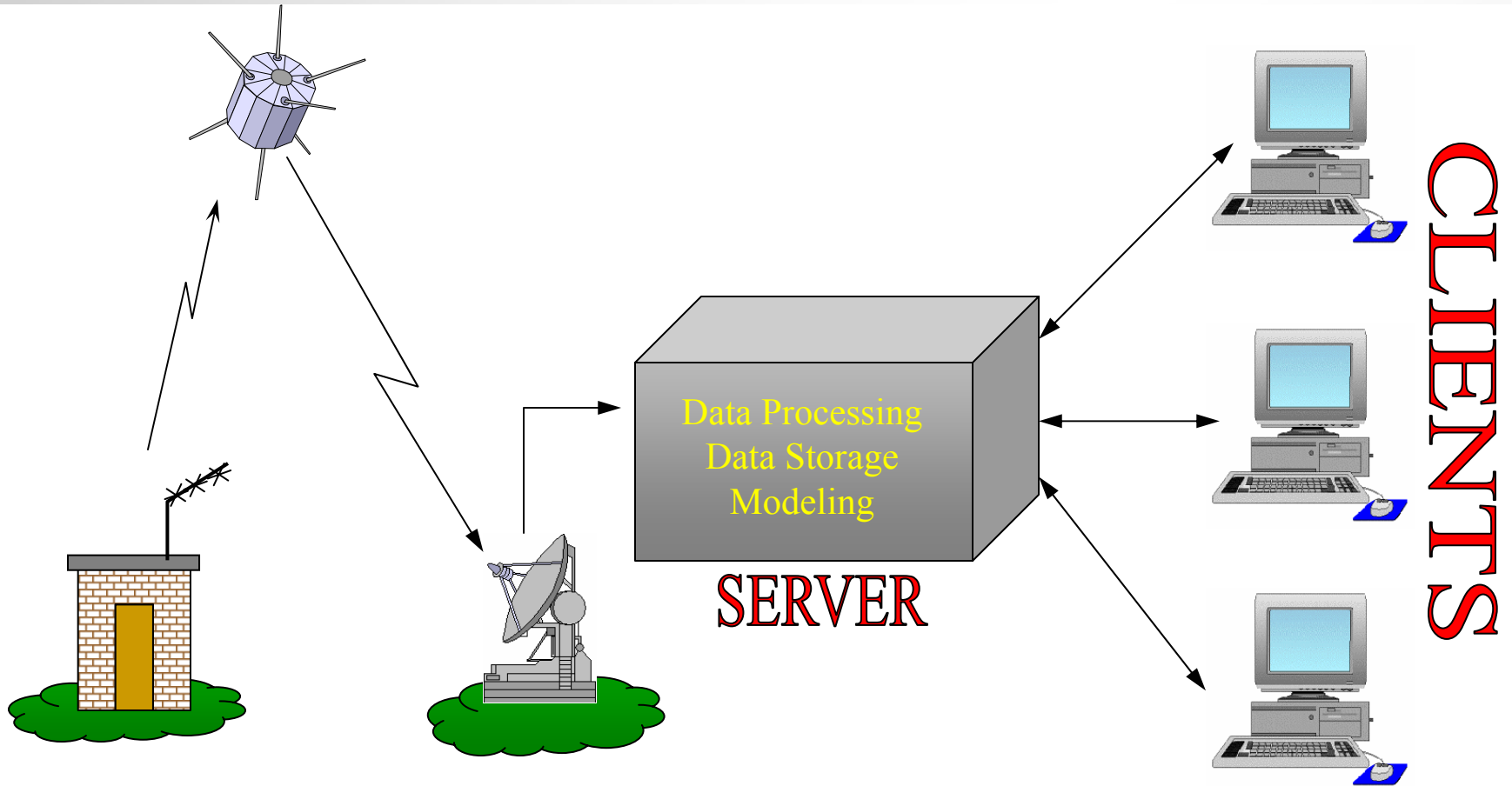US Army Corps
of Engineers
Baltimore District

Precip Gage Locations
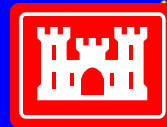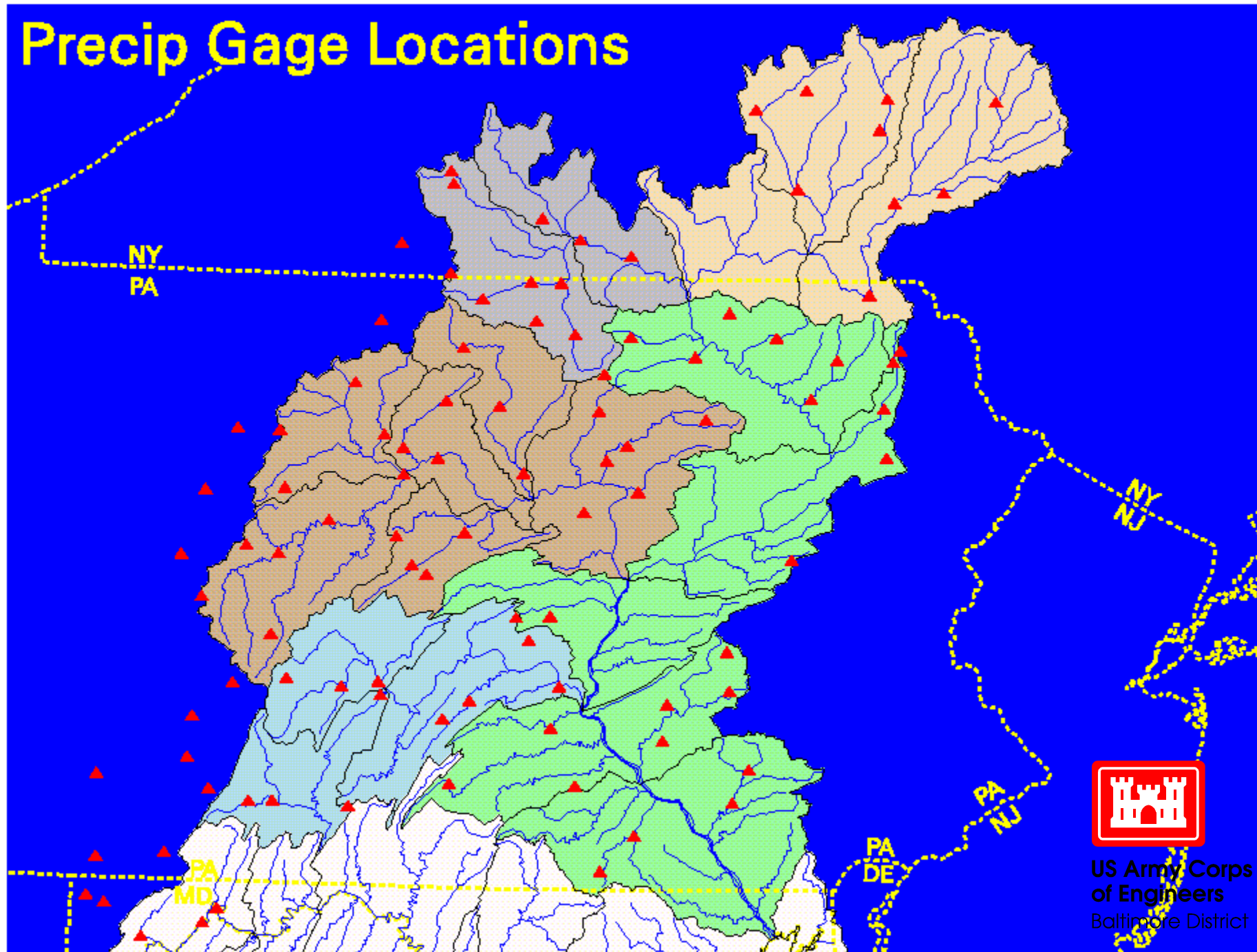
US Army Corps
of Engineers
Baltimore District

Hardware & Software Setup

Data Processing
Data Storage
Modeling

SERVER

CLIENTS
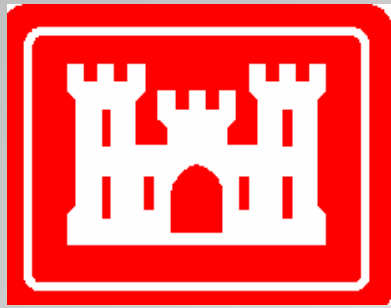
CWMS Components
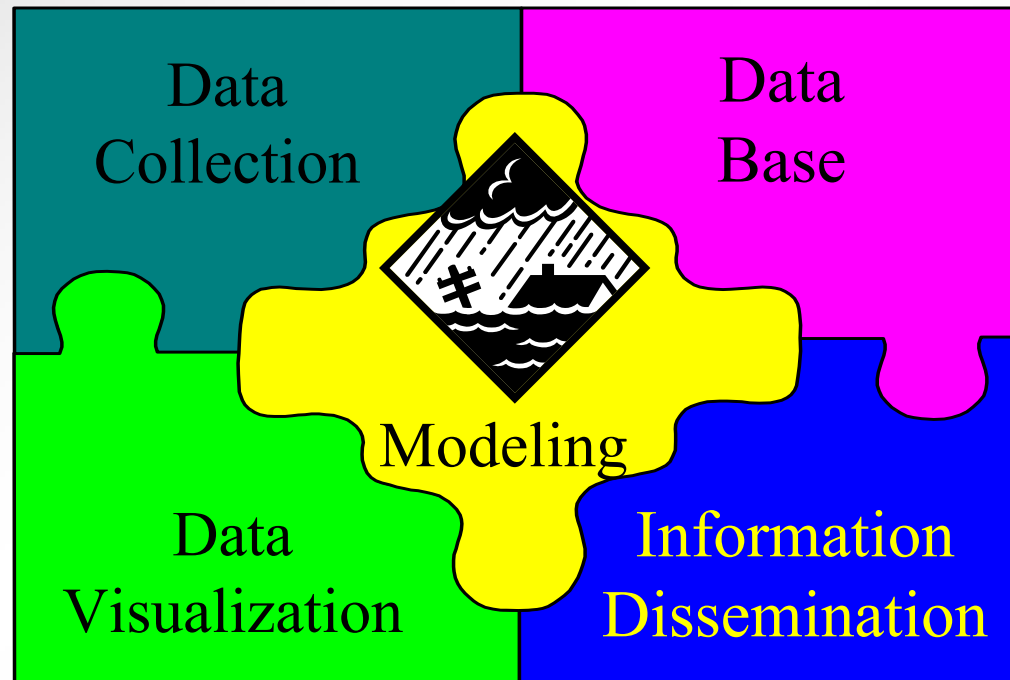
Data Acquisition

- Collect:
  - Real-time data: observed stream flow, precipitation, temperature, water quality, gate settings, reservoir levels, etc.
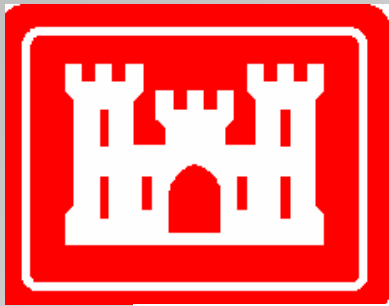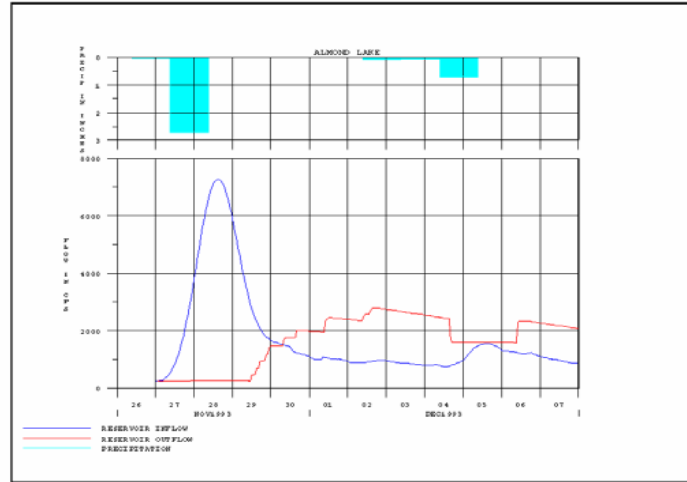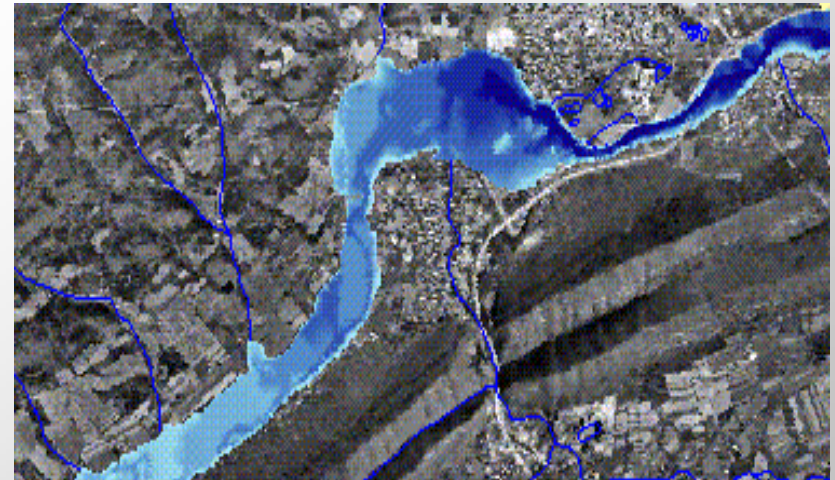 - Static data: physical data for model development
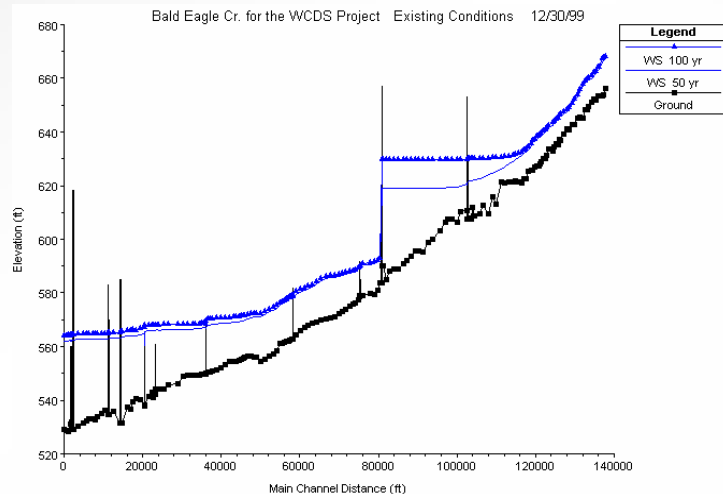
- Decode
- Validate
- Transform
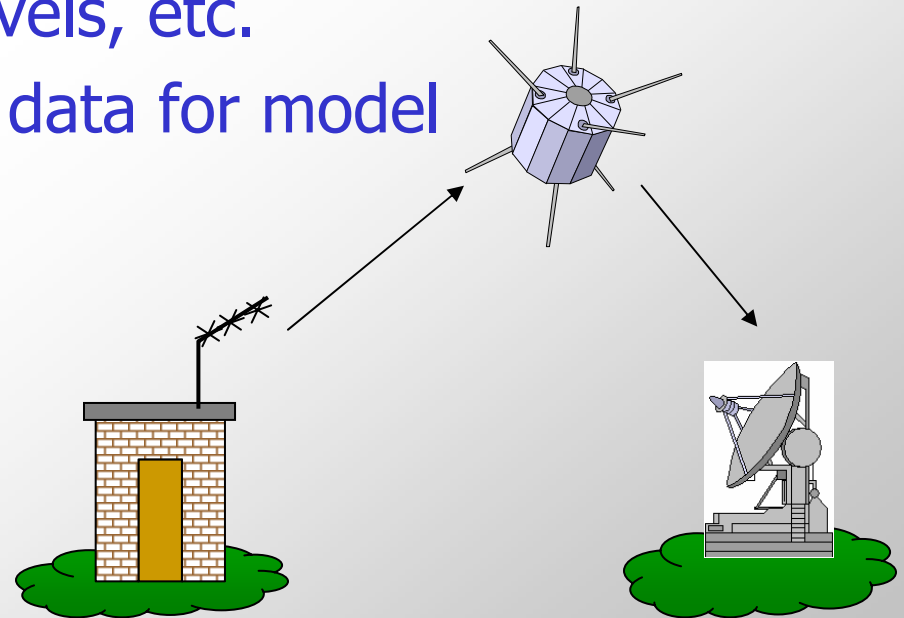
Data Base

- ORACLE is CWMS record database
- Interfaces with other databases
- Accessible by multiple users
- Modeling
- GIS database

Data Visualization

Information Dissemination
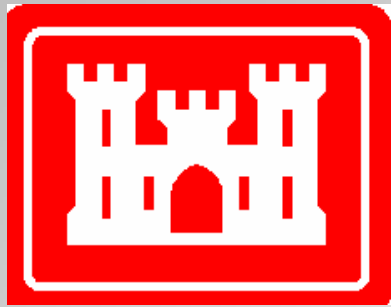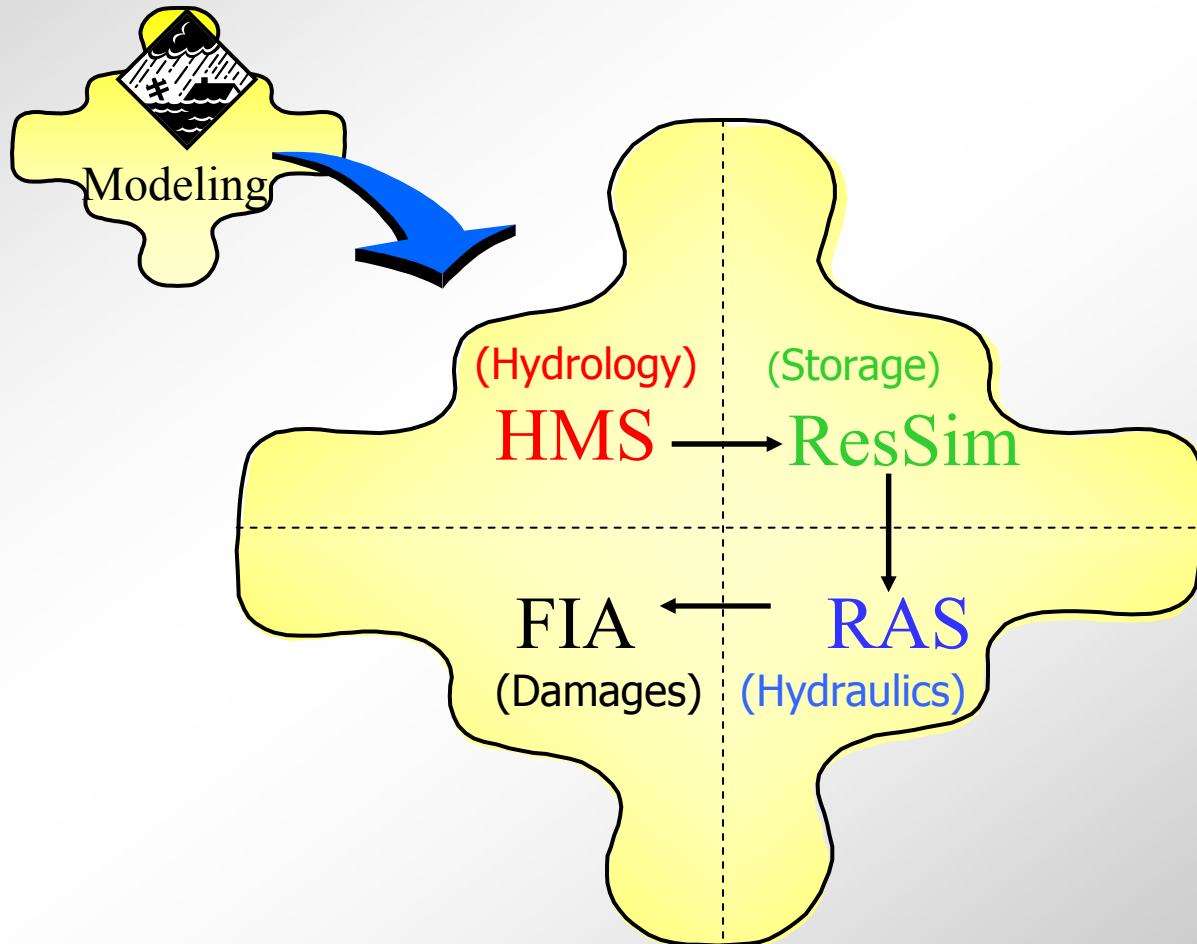
- Common information source
- Data & information placed on WEB-based platform
  - Available to Corps users & outside interests
  - Real-time availability

Watershed Modeling
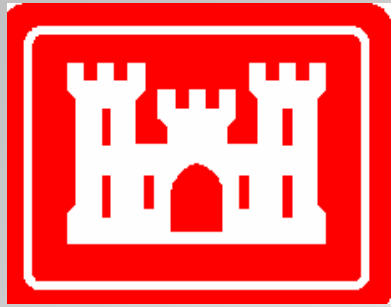
CWMS Products for Water Control Management

- Automated data acquisition
- Standard Corps database
- Seamless integrated models
- Timely simulations
- Inundation mapping
- Real-time water control decision support
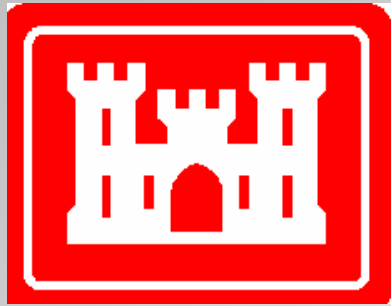
CWMS Requirements

- Wide gage network for real-time data collection

- Extensive hydrologic, hydraulic, boundary, & damage information

- Modeling expertise

- Detailed mapping

- Fast & reliable client/server system

- Time and money for development

Applications

- CWMS provides real-time water control management decision support

- Emergency planning and response

- Project planning (new projects, alternative projects, modified regulation)

- Post-event analyses (benefits)

- Flood plain studies

Database Query

- Complete period-of-record database online
- http://www.nwd-wc.usace.army.mil/cgi-bin/dataquery.pl
- CWMSQuery available in a couple of months
- Need support?
  - Email: cenwd.cwms.help@usace.army.mil

CWMS

Corps Water Management System